

**Quick  
Reference  
and Rack  
Installation  
Instructions**

# hp StorageWorks NAS 9000s



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Printed in the U.S.A.

HP StorageWorks NAS 9000s  
Quick Reference and Rack Installation Instructions  
First Edition(September 2003)  
Part Number: 352401-001



352401-001

## Thank you for purchasing your new HP StorageWorks NAS 9000s

The NAS 9000s two-way server is housed in a modular, 4U (7" high) rack-mount chassis that combines expandability with efficient and space-saving design. The server combines enhanced performance and optimal rack density with maximum availability and manageability.

### Important Safety Information

Before installing this product, read the Important Safety Information document provided.



**WARNING:** This product contains energy levels that are considered hazardous. To reduce the risk of personal injury from electric shock and hazardous energy, individuals who are knowledgeable of the procedures, precautions, and hazards associated with equipment containing hazardous energy circuits must perform the installation and servicing of this product.



**WARNING:** To reduce the risk of personal injury or damage to the equipment:

- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Obtain adequate assistance to lift and stabilize the chassis during installation or removal.
- Be aware that the product becomes unstable when it is not fastened to the rails.
- Before removing the server from the rack remove all hot-plug power supplies, power modules, and drives to reduce the overall weight of the product.
- Before removing the server from the rack remove all hot-plug power supplies, power modules, and drives to reduce the overall weight of the product.

## Rack Stability



**WARNING:** To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are fully extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- The stabilizing feet are connected to the rack if it is a single-rack installation.
- The racks are coupled together in multiple-rack installations.
- The components are extended one at a time only. A rack may become unstable if more than one component is extended.

## Audience Assumptions

This poster provides a quick way for customers experienced in server installations to setup and configure the NAS 9000s server. The following instructions are written for persons who are qualified in installing and servicing computer equipment and are trained in recognizing hazards in products with high-energy levels, such as the power supplies, System Power Modules, and redundant line cord switches in this computer system. For detailed instructions, refer to the setup and installation guide.

## 1. Selecting the Optimum Environment

Select an installation site that meets the following requirements:

- Space and airflow
- Temperature
- Power
- Grounding

Detailed installation site requirements for this server are listed in the setup and installation guide. For guidance in placing servers and components into a rack, refer to the rack template or the setup and installation guide.

## 2. Unpacking the Shipping Boxes

Unpack the server by following the instructions and illustrations printed on the outside of the boxes. Also unpack the power cords, rack mounting hardware, and the hardware documentation, reference information, and software packs that are located in the country kit box.

In addition to these items, you may need:

- Torx T-15 tool, which is located on the rear of the server
- Phillips screwdriver
- Options to be installed, such as expansion boards, monitors, power supplies, processors, processor power modules (PPMs), and memory modules
- Application software
- Flat-blade screwdriver
- Felt-tip marker or pencil

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**Note:** Save the packing material for reuse if you need to ship the server in the future.

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**Note:** Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes, and keeps the system in operation during a power failure. For more information on UPS and other options, refer to the HP website:

[www.hp.com](http://www.hp.com)

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## 3. Installing Options

If you are installing additional options, such as expansion boards, processors, PPMs, hard drives, or memory, you can refer to the instructions included with the option purchase, the back of this poster, or the setup and installation guide.

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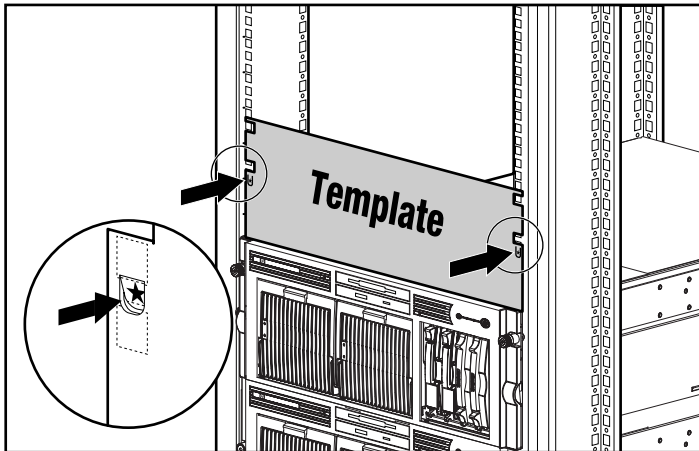
**Note:** For quick start memory guidelines, refer to the flowchart and other information located on the back of this poster.

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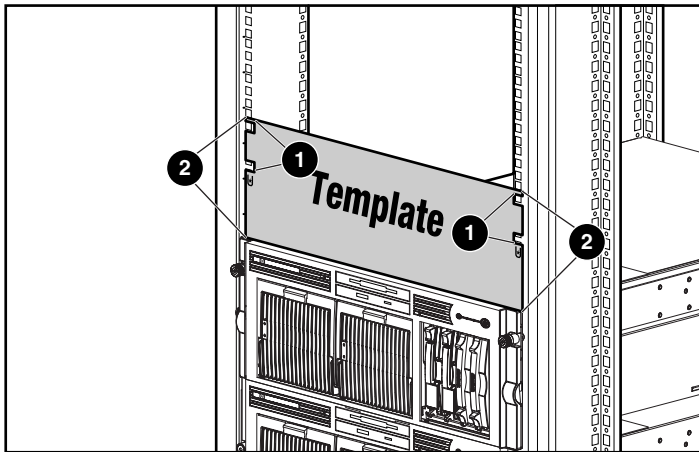
## 4. Installing the Server into a Rack

To identify the required space and location for the server with the template:



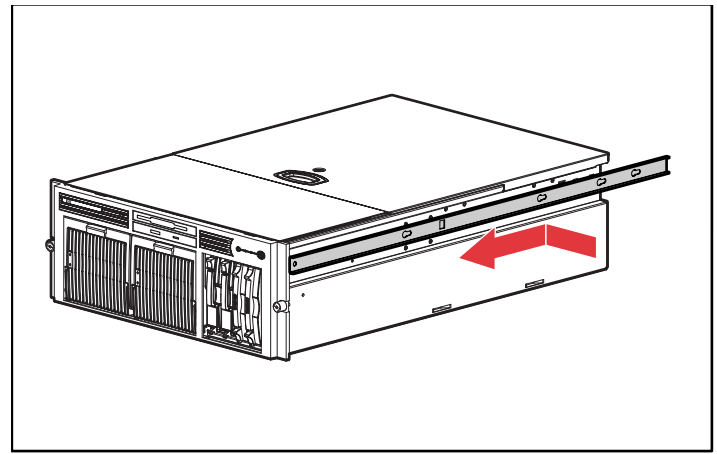
1. Identify the front side of the template.
2. Starting at the bottom of the rack or at the top of a previously mounted component, secure the template against the front of the rack by pressing the two push tabs. Match the hole pattern on the template with the holes in the vertical rails of the rack.
3. Align the template so that the sides of the template are even with the sides of the rack. Tick marks on the vertical rails of the rack help you maintain the proper alignment.

**Note:** Tick marks on the rack's vertical posts mark off U-spaces in the rack configuration and help to maintain the proper alignment

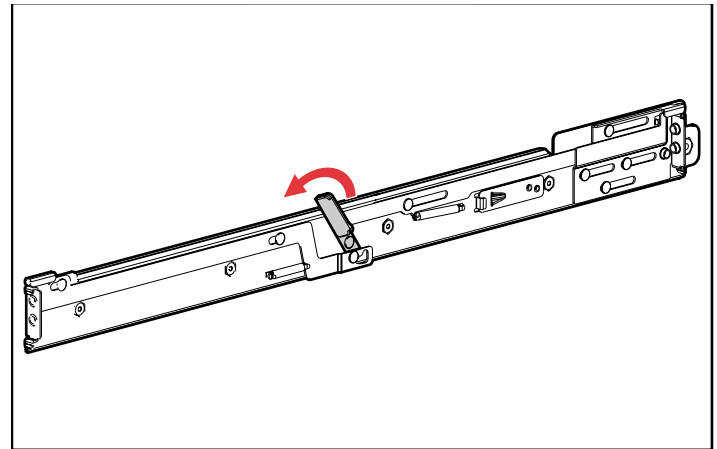


4. Using a pencil, mark the locations on the rack where you insert the rack rail tabs (1).
5. On the rack, mark the top and the bottom edges of the template (2). This step helps you align a template for the next component.
6. Move to the rear of the rack and turn the template over so you can use the backside of the template. Repeat steps 2 through 5 on the rear of the rack.

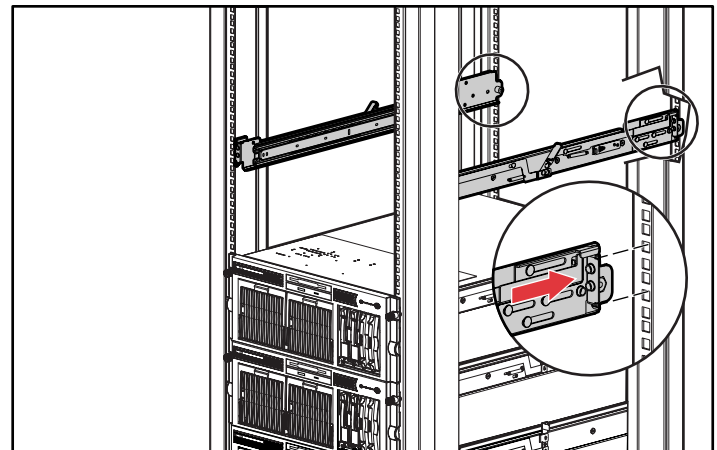
**Note:** On the rear of the rack, make the pencil marks on the inside of the vertical rails. These markings guide you in installing rack rails into the interior of the rack frame.



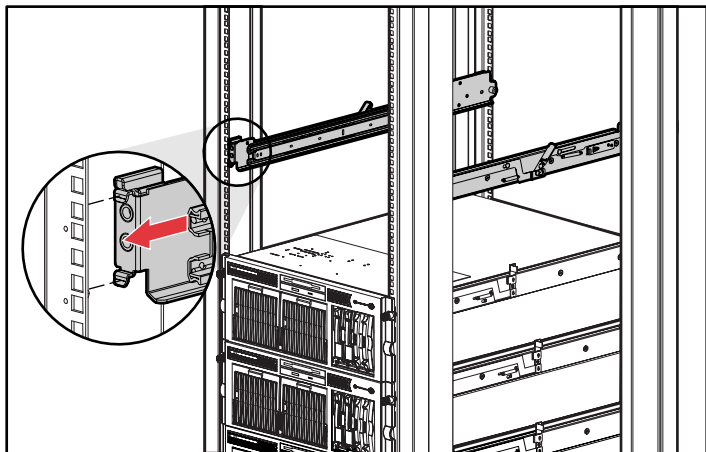
7. Install the rails on both sides of the chassis.



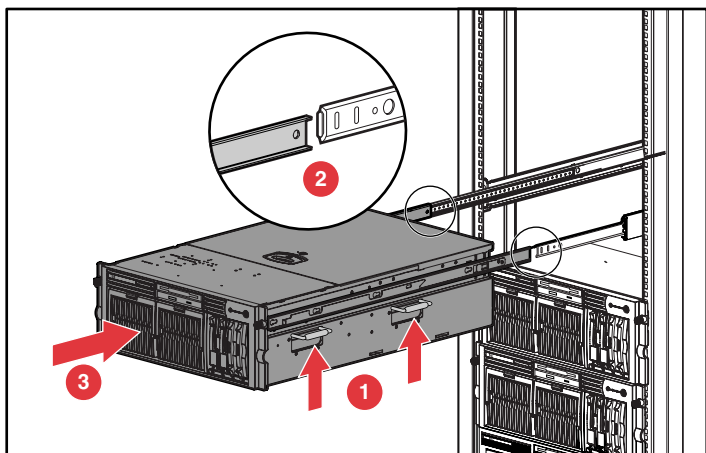
8. Pull the rail compression lever towards you.



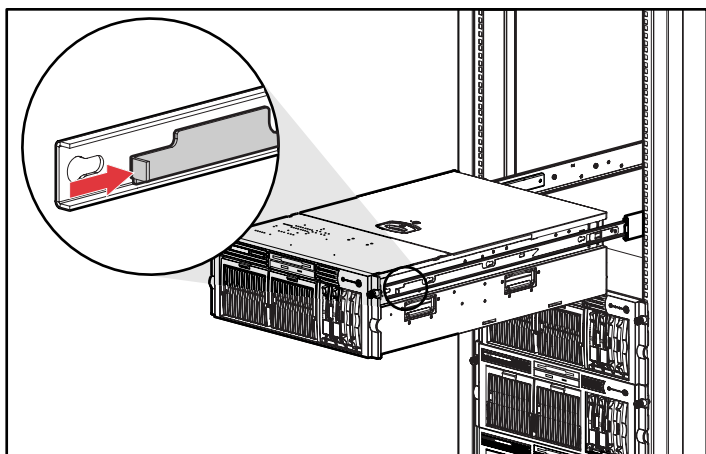
9. Install the rear of the rail into the designated holes in the rear of the rack.



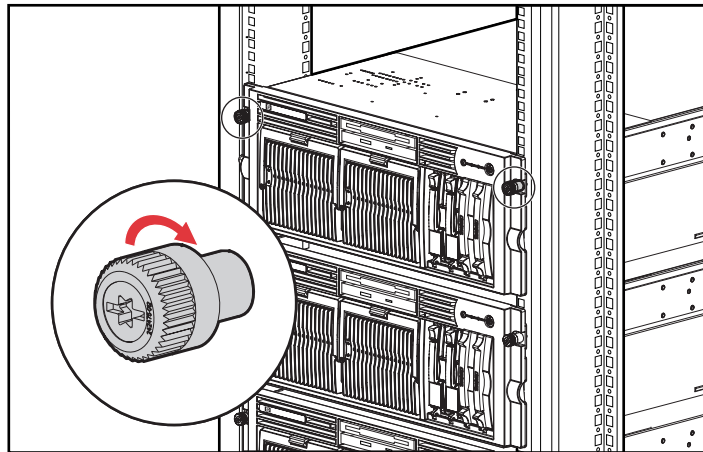
10. Install the front of the rail into the designated holes in the front of the rack.



11. Install the rails on the chassis into the rails in the rack.



12. Slide the server onto the rack rails until the locking pin engages.



13. Tighten the thumbscrews to secure the server to the rack.

## 5. Connecting the Power Cord and Device Cables

The NAS 9000s server can operate either on a 120-V or a 240-V AC input. Two AC inlets are on the rear of the server, one for each power supply installed.



**WARNING:** To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord-grounding plugs. The grounding plugs are an important safety feature.
- Plug the power cords into grounded (earthed) electrical outlets that are easily accessible at all times.
- Disconnect power from the server by unplugging the power cords from either the electrical outlets or the server.

To connect the power cords:

1. Locate the correct voltage line cords that came with your server. Remove any labels that cover the cord connectors.
2. Plug the power cords into the power supply AC inlets.

**Note:** To connect the power cords, plug them into the appropriate power supply AC inlets. The power connector is connector number one for the primary power supply and is connector number two for the redundant hot-plug power supply.

3. Plug the other end of the power cords into grounded electrical outlets or UPS, depending on power cord types.

**Note:** To help protect the server against downtime due to a loss of power, plug each power supply into separate AC circuits.

4. Connect the peripheral device cables to the server, and then route the power cord and device cables through the cable management solution. For more information, refer to the Cable Management System Reel Assembly Installation Instructions that are included in the hardware kit.

## 6. Powering Up the Server

The NAS 9000s is preloaded with the NAS OS. Prior to power up, deployment instructions found in the Installation Guide should be followed to enable the successful configuration of the NAS device in addition to the guidelines found below.

Required Items:

- Installation Guide
- Administration Guide

To begin the first-time startup procedure:

1. Be sure that the server is safely installed in an adequate environment.
2. Be sure that the power cables and peripheral devices are plugged in and that adequate AC power is supplied to the server.
3. Refer to the Installation Guide prior to powering up the device.

## 7. System Software

The HP StorageWorks NAS 9000s is preloaded with software from the HP Factory and is ready to be customized for the customer environment. For details regarding the customization of the NAS device for the environment, please see the Installation Guide included with the product, prior to powering on the product.

## 8. Registering Your Server

Register the server online at

[www.register.hp.com](http://www.register.hp.com)

## 9. Finding Additional Information

For additional information about this server and other HP products, refer to the HP website at

[www.hp.com](http://www.hp.com)

## Regulatory Compliance Information

The rating label on the device shows which class (A or B) the equipment falls into. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC ID or logo on the label. When the class of the device is determined, refer to the following corresponding statement. For complete regulatory notices, see the setup and installation guide in the server documentation.

### Series Number

For the purpose of regulatory compliance certifications and identification, your product has been assigned a unique series number. The series number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this series number. The series number should not be confused with the marketing name or model number of the product.

## Memory Configuration and Installation

The NAS 9000s server ships standard with 4 GB of PC1600 DDR Standard Memory (Advanced ECC). Additional components may be purchased to provide varying levels of redundancy. The sections below detail these advanced memory configurations.

### 1. Choosing the Memory Mode

Consult this overview when determining what type of memory protection is best for your needs.

#### Standard Memory (Advanced ECC)

- Provides Advanced ECC protection, which protects against single-bit errors and some multi-bit errors
- Maximizes system memory capacity

#### Online Spare

- Provides higher level of memory protection than standard memory
- Does not protect against multi-bit errors
- Online spare bank must match the largest DIMM bank used in the server
- Downtime must be scheduled to replace failed memory

#### Single-Board Mirrored Memory

- Provides a higher level of memory protection than online spare when using only one memory board
- Provides protection against both single-bit and multi-bit errors
- Supports up to 8 GB of system memory and 8 GB of redundant memory using 2-GB DIMMs
- Downtime must be scheduled to replace failed memory

#### Hot-Plug Mirrored Memory

- Provides complete redundancy by using an additional memory board
- Requires two memory boards configured identically
- Provides superior memory protection against single-bit and multi-bit errors
- Provides hot-plug replacement capability
- Eliminates server downtime

### 2. Determining Memory Configuration/Guidelines

Consult the following guidelines when configuring the memory for the server.

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**Note:** Memory board slot 1 must always be populated.

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#### Standard Memory (Advanced ECC)

- Install DIMMs in groups of four.
- Bank A must always be populated.
- All DIMMs in a bank must be identical.
- System has no hot-plug capabilities in this configuration.

## Online Spare

- Install DIMMs in groups of four.
- Bank A must always be populated.
- All DIMMs in a bank must be identical.
- System has no hot-plug capabilities in this configuration.
- One or two memory boards can be configured for online spare.
- DIMMs in the online spare bank must be of equal or greater capacity than all other banks.
- Bank B on the memory board in slot 1 is the online spare bank, even if two memory boards are installed, and must be populated in this configuration.

## Single-Board Mirrored Memory

- Install DIMMs in groups of four.
- Bank B mirrors bank A. Bank A must always be populated.
- All DIMMs in a bank must be identical.

## Hot-Plug Mirrored Memory

- Install DIMMs in groups of four.
- Bank A must always be populated.
- All DIMMs in a bank must be identical.
- The "Ready to Hot Plug" LED indicates when a memory board can be hot-plugged.
- Two memory boards must be installed.
- Both memory boards must be configured identically to enable mirroring. Corresponding banks (for instance, bank A on the memory board in slot 1 and bank A on the memory board in slot 2) must be populated with DIMMs of the same capacity.

## 3. Installing and Testing the DIMMs

If you plan to use online spare memory or hot-plug mirrored memory, HP recommends testing new DIMMs.

To test DIMMs during each boot:

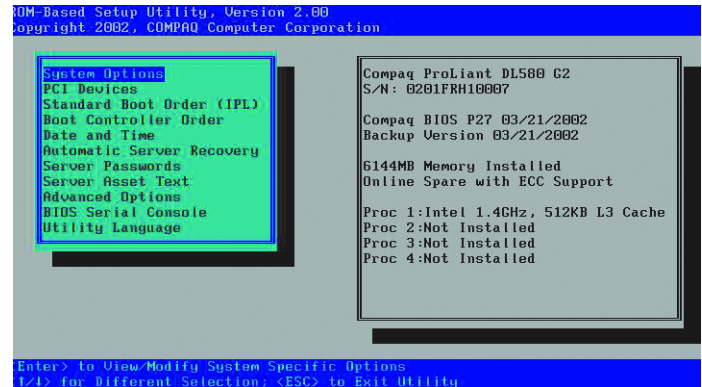
1. Power on the server.
2. Press the **F9** key to enter RBSU.
3. Select Advanced Options.
4. Change POST Speed Up to disable.
5. Press the **Esc** key twice to return to the main RBSU menu.
6. Press the **F10** key to exit RBSU. The server reboots and tests all memory in the system.
7. Once the memory has been tested, re-enable POST Speed Up for faster system boot.
8. Configure your memory.

## 4. Configuring the Memory

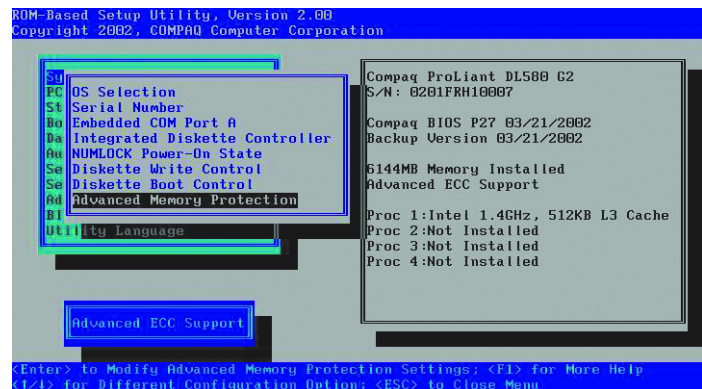
**Note:** To reconfigure the memory mode after initial setup, you must reboot the system and enter RBSU.

You must configure the memory in the server before deployment. To configure memory through RBSU:

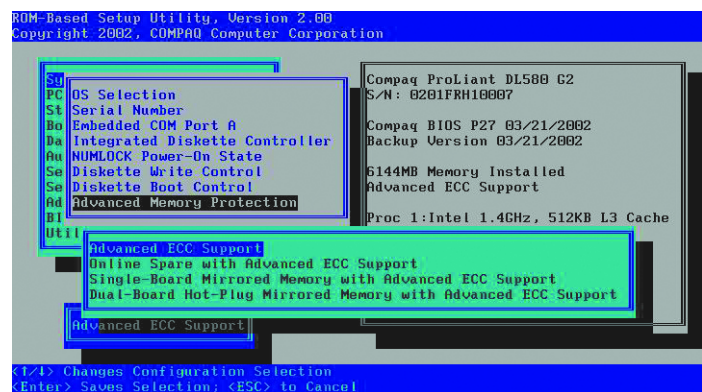
1. Press the **F9** key to enter RBSU.



2. Select System Options.



3. Select Advanced Memory Protection.



4. Select your memory mode.
5. Press the **Enter** key.
6. Press the **Esc** key twice to return to the main RBSU menu.



PCI-X Hot Plug Board Information

CAUTION: To avoid critical errors, do not open the slot release lever if the green power LED is ON or BLINKING. Use the PCI-X Hot Plug button or the software application to turn off power to the slot.

PCI-X Hot Plug button

Amber

Green

Green LED	OK to Open	Slot Status	Amber LED	Slot Status
<div><div></div></div>	No	Power is applied to slot.	<div><div></div></div>	Slot does not require attention.
<div><div>(blinking)</div></div>	No	Power to slot is being turned OFF or ON. This process may take several minutes. Do not open the slot release lever until the green LED is completely off.	<div><div></div></div>	Slot requires attention. There may be a problem with the slot, the PCI-X board, or the driver. Check the green LED before opening the slot.
<div><div></div></div>	Yes	You may replace or remove a board in this slot only.		

Installing a PCI-X Hot Plug Board

Removing a PCI-X Hot Plug Board

Opening and Removing the Rear Access Panel

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Line up guide marks on access panel and chassis to install and remove the panels.

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Removing the Front Access Panel

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Installing a SCSI Drive

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Exterior View of Server

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Simplex Duplex SCSI IDs

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Replacing a Redundant Hot-Plug Power Supply

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Remove power supply

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Install Power Supply

Power Supply LEDs

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Status

Power LED (Green)	Fault LED (Amber)	Status
Off	Off	No AC power
Off	On	No AC power to this specific power supply Or Power supply failure
Blinking	Off	AC power present System in standby mode
On	Off	Power supply on and working properly
On	Blinking	Power supply current limit exceeded

Installing a Processor and Processor Power Module

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Remove memory board 1. Remove the air baffle.

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IMPORTANT: Align the processor pins to seat the processor into the socket. The processor is keyed to fit only one way in the socket.

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IMPORTANT: Observe lever status when opening it. The lever status is clearly marked on the lever itself.

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CAUTION: Before shutting the bracket, ensure lever is closed. Forcing the bracket shut damages the socket.

Replace air baffle. Replace memory board 1.

Removing and Installing a Hot-Plug Memory Board

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CAUTION: Improper removal of the memory board damages the system. For guidelines and procedures, refer to the setup and installation guide.

Listen for audible alarm and check for blinking LEDs on memory board. Reverse step 1 if there is an audible alarm and/or LEDs blinking. If there is no audible or visual alarm, proceed to steps 3 and 4.

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Installing Memory (DIMMs)

Replacing a Hot-Plug Fan

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Failed (Amber)

OK (Green)

Memory Board Status LEDs

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Advanced ECC LEDs (Standard Memory)

Description	LED	Status
DIMMs 1-8 Status	Off	DIMM is not installed.
	Green	DIMM is installed.
	Amber	Memory error has occurred on this DIMM.
	Blinking Amber	Configuration error has occurred.
Memory Status	Off	Board is offline.
	Green	Board is online.
	Blinking Green	Board is busy.
Online Spare Status	Off	Board is not configured for online spare.
	Green	Online spare memory is functioning properly.
	Amber	Memory error has occurred on this bank and system has failed over to the online spare bank.
"Online Spare" Text	Off	Board is not configured for online spare.
	Green	Bank is configured as a spare bank.
	Blinking Green	Failover has occurred and spare bank is active.

Single-Board Mirrored Memory

Mirroring Status	Off	Board is not configured for mirrored memory.
	Green	Single-board mirrored memory is functioning properly.
	Amber	Memory error has occurred and system has failed over to the mirrored bank.

Hot-Plug Mirrored Memory

Mirroring Status	Off	Board is not configured for mirrored memory.
	Green	Hot-Plug mirrored memory is functioning properly.
	Amber	Memory error has occurred and system has failed over to the mirrored bank.
Ready to Hot-Plug	Off	Do not remove memory board.
	Green	Okay to remove memory board.

All LEDs

All LEDs	Blinking Amber	CAUTION - Memory board is in use; reload it immediately.
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Removing and Installing a Multibay Drive

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5i Plus Memory Module Cabling

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Remote Insight Management Cabling

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System Configuration

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Slots 1 through 6 are PCI-X 64-bit, 100 MHz

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FRONT

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Configuration Maintenance Switch (SW4)

Switch	Function (bold is default)	Switch	Function (bold is default)
S1	Reserved	S5	Off = Power-On password works normally On = Power-On password is disabled
S2	Off = System configuration can be changed On = System configuration is locked and cannot be modified	S6	Off = Configuration valid On = ROM treats system configuration as invalid
S3	Reserved	S7	Off = Disable On = Enable
S4	Off = Booting from floppy disk is controlled by config On = Booting from floppy disk is enabled and config is overridden	S8	Off = Disable On = Enable

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Integrated Lights-Out Override Switch (SW8)

Position	Description	Indication
2	Reserved	
1	iLO security override	Off = Normal (default) On = Override

Memory Board Components

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Item	Description
1	DIMM slot 1, bank A
2	DIMM slot 2, bank A
3	DIMM slot 3, bank A
4	DIMM slot 4, bank A
5	DIMM slot 5, bank B
6	DIMM slot 6, bank B
7	DIMM slot 7, bank B
8	DIMM slot 8, bank B
9	LEDs
10	Locking switch
11	Release latches
12	Ejector levers